

5

10 What is claimed is:

1. An optical device comprising;

an optical element,

a resin boundary surface for almost totally reflecting light
deviated from a predetermined front area of said optical element, and

15 a light reflecting member, in which said optical element, said
resin boundary surface and said light reflecting member are positioned
so that a light path from said optical element to the external of said
optical device can pass through a path which is reflected back at least
more than once with each of said resin boundary surface and said light
20 reflecting member.

2. A light emission source in which a light emitter is positioned

reflected by a resin boundary surface, and a light reflecting member is disposed behind said resin boundary surface so as to reflect the light emitted from said light emitter and almost totally reflected by said resin boundary surface to be emitted forward.

5 3. A light emission source according to claim 2, in which at least a part of said resin boundary surface slants against a plane perpendicular to an optical axis of said light emitter.

4. A light emission source according to claim 2, in which at least a region of said light reflecting member reached by the light totally
10 reflected by said resin boundary surface constitutes a concave mirror having a focal point at a mirror position of said light emitter with respect to said resin boundary surface.

5. A light emission source according to claim 2, in which distribution field of curvature in light reflecting surfaces of said
15 light reflecting member is different on a pair of mutually perpendicular sections crossing the optical axis of said light emitter.

6. A light emission source according to claim 5, in which an optical lens is disposed in a predetermined area in front of said light emitter, and the distribution fields of curvature on a surface of said optical
20 lens are different on mutually perpendicular sections crossing the optical axis of said light emitter.

from a plane perpendicular to the optical axis of said light emitter.

8. A light emission source comprising a light emission face in front of a light emitter, in which said light emission face is disposed to turn to a top than horizontal, and at least a part of the light
5 emitted from said light emission face is emitted downward.

9. A light emission source according to claim 2, in which the light reflected by said light reflecting member is emitted in a slanting direction against the optical axis of said light emitter.

10. A light emission source according to claim 2, in which at least
10 a region of said light reflecting member reached by the light totally reflected by said resin boundary surface constitutes a concave mirror, and said light emitter is disposed in a location deviated from a mirror position of the focal point of said concave mirror with respect to said resin boundary surface.

15 11. A light emission source according to claim 2, which includes a second light reflecting member reflecting the light emitted from a side of said light emitter in a forward direction, and in which the angle of inclination of said second light reflecting member is set so that most of light reflected by said second light reflecting member
20 reaches said resin boundary surface.

12. A light emission source according to claim 11, in which said

by said light emitter

13. A light emission source according to claim 2, which at least a part of said light reflecting member comes into contact with an outer circumferential part of the resin composing said resin boundary surface.

5 14. A light receiver molding a photo detector within a resin, in which a light reflecting member is disposed behind a boundary surface on a light receiving side of said resin so that it reflects the light entering into a region deviated from a predetermined area in front of said photo detector to be totally reflected by a resin boundary
10 surface to be received by said photo detector.

15. A light receiver according to claim 14, in which at least a part of said light reflecting member comes into contact with an outer circumferential part of a resin layer composing said resin boundary surface.

15 16. An optical component mounting a light active element such as a light emitter or a photo detector on an element mounting position, comprising

a resin boundary surface for almost totally reflecting the light deviated from a predetermined area in front of said element mounting
20 position and a light reflecting member, in which said element mounting position, said resin boundary surface and said light reflecting member

the external can pass the light of the said element mounting position.

least more than once with each of said resin boundary surface and said light reflecting member.

17. An optical component positioned on a front of a light source, comprising

5 a resin boundary surface for almost totally reflecting the light emitted from said light source, and

a light reflecting member for reflecting the light almost totally reflected by said resin boundary surface to be emitted forward.

18. An optical component positioned on a front wall of a photo
10 detector, comprising

a light reflecting member for reflecting the light entering from an external, and

a resin boundary surface for totally reflecting the light reflected by said light reflecting member to strike against said photo
15 detector.

19. An optical component according to one of claims 16, 17 and 18, further comprising a recess on an opposite face of each component against said resin boundary surface in order to at least dispose either said light emitter or said photo detector.

20. An optical component according to one of claims 16, 17 and 18, further comprising an engagement portion in order to establish a

element according to claim 19.

21. An optical component according to one of claims 16, 17 and 18, in which a portion of said element mounting position is a recess or an open hole.

22. An optical component according to one of claims 16, 17 and 18,
5 further comprising a positioning portion to fix a positional relationship with said optically active element.

23. An optical component according to one of claims 16, 17 and 18, in which an external configuration of said component viewed from its front includes a major axial direction and a minor axial direction.

10 24. An optical component array arranged by a plurality of the optical components according to one of claims 16 to 23.

25. An optical device in which said optical component and said optically active element according to one of claims 16 to 23 are arranged by a predetermined spacing which is filled with optically transparent
15 materials so as to engage said optical component with said optically active element.

26. An optical component according to one of claims 16 to 18, in which at least a part of said light reflecting member comes into contact with an outer circumferential part of the resin layer providing said
20 resin boundary surface.

27. A method for manufacturing an optical component including a

reflecting the light reflecting member in a predetermined region which

of a light emitter and a light reflecting member for forwardly emitting the light almost totally reflected by said resin boundary surface, comprising a step of resin-injecting at least a part of an outer circumferential part of said light reflecting member striking against an internal surface of a cavity of a metal mold.

28. A method for manufacturing an optical component including a light reflecting member for reflecting the light striking against a region deviating from a predetermined region in front of a light emitter, and a resin layer having a resin boundary surface for almost totally reflecting the light reflected by said light reflecting member, comprising a step of resin-injecting at least a part of an outer circumferential part of said light reflecting member striking against an internal surface of a cavity of a metal mold.

29. A light emission method in which the light deviated from a predetermined front area among the light emitted from a light source is almost totally reflected by a resin boundary surface, and the light totally reflected by said resin boundary surface is emitted forward by said light reflecting member disposed behind said resin boundary surface.

30. A light incidence method, in which the light deviated from a predetermined area in front of a photo detector among the light entered

member, and the light reflected by said light reflecting member.

totally reflected by a resin boundary surface to strike against said photo detector.

31. A photoelectric sensor comprising the light receiver employing a photoelectric transducer as a photo detector according to claim 14
5 and a light projecting element, in which the light emitted by said light projecting element or the light emitted by said light projecting element and reflected by an object is detected by said light receiver.

32. A self light generating apparatus comprising a light receiver according to claim 14 employing a photoelectric transducer as said
10 photo detector, a battery charger for charging electric energies generated by said light receiver, and a light emission source.

33. A display apparatus arranged by a plurality of light emission sources according to claim 2 or a plurality of optical components according to claim 17.

15 34. A light source for an automobile lamp arranged by a plurality of light emission sources according to claim 2 or 5 or a plurality of optical components according to claim 17.

35. An outdoor display apparatus arranged by a plurality of light emission sources according to one of claims 1, 4, 8 and 10 or a plurality
20 of optical components according to claim 17.